

## Laying hen welfare standards: a classic case of ‘power to the people’

CJ Savory

Avian Science Research Centre, Scottish Agricultural College, Auchincruive, Ayr KA6 5HW, Scotland, UK

### Abstract

Legislation concerning laying hen welfare appears to be influenced more by public perceptions than by scientific and commercial evidence. This paper considers public understanding and power over the issue, and how welfare standards are structured. The usual objection to battery cages is that they do not provide enough space, but there seems to be ignorance of the fact that they were developed in order to improve the health of hens. Evidence is presented of more advantages than disadvantages with cage systems, and of the opposite with alternative (non-cage) housing. Why, then, does the public remain more concerned about just one of the Farm Animal Welfare Council's Five Freedoms — to display most normal patterns of behaviour — than about the other four? Arguably, the declared intent to ban battery cages in the EU in 2012 could not have been based justifiably on evidence in the European Commission Scientific Veterinary Committee's Report on the Welfare of Laying Hens. One therefore has to conclude that the decision to ban battery cages was taken for mainly political reasons, reflecting a belief that the majority of public opinion is against cages. Directive 99/74/EC will allow the use of ‘enriched cages’ after 2012, but, for political reasons, Germany intends to ban battery cages in 2007 and enriched cages in 2012. Following a recent public consultation on a possible similar ban on enriched cages in England, it was decided to defer a decision until after Directive 99/74/EC is reviewed in 2005. In one non-EU country, Switzerland, a national referendum led to a ban on battery cages in 1992. At present, there are ambiguities in minimum standards for different housing systems based on Directive 99/74/EC, which can be exploited by egg producers, sometimes at the expense of bird welfare. These concern stocking densities, the provision of claw-shortening devices, litter and perches, and the practice of beak trimming. They raise the question of the extent to which the structuring of welfare standards should represent a compromise between bird welfare, practicalities, public pressure and commercial interests.

**Keywords:** ambiguities, animal welfare, laying hen housing systems, public power, public understanding, structuring of standards

### Introduction

Between 1986 and 1996, the proportion of laying hens in the UK that were kept in cages (nearly all of the conventional battery type) declined from 93% to 86%, the proportion kept in perchery/barn housing increased from 2% to 3%, and the proportion kept in free-range systems (including organic) increased from 5% to 11% (FAWC 1997). By June 2002, 68% were in cages, 7% were in perchery/barn housing, and 25% were in free-range systems (Randall 2003). This trend is set to accelerate greatly by 1 January 2012 when Council Directive 99/74/EC (‘laying down minimum standards for the protection of laying hens’) proposes that the use of conventional (unenriched) battery cages will be banned altogether in the EU. This will have a major impact on commercial egg production, and probably cause increased importation of cheaper (cage) eggs from outside the EU. It will not necessarily improve laying hen welfare. This paper considers how this situation has arisen, in terms of ‘public understanding’ and ‘public power’. It also considers how the rules, or ‘minimum welfare standards’, which apply to each type of housing system have been structured, and gives particular attention to ambiguities that exist in their wording.

### Public understanding

The issue of acceptability of different housing systems for laying hens must surely be a classic example of how public perceptions can be inconsistent with scientific and commercial evidence. The public's usual objection to the keeping of hens in battery cages is that the birds do not have enough space in which to walk about or to stretch or flap their wings freely. This is consistent with the opinion of Harrison (1964), who, in her seminal book *Animal Machines*, highlighted the fact that Clause 8 of the (UK) Protection of Birds Act 1954 made it an offence to “keep or confine any bird whatsoever in any cage or other receptacle which is not sufficient in height, length or breadth to permit the bird to stretch its wings freely, *provided that this subsection shall not apply to poultry*” (Harrison's italics). Subsequent legislation did lay down minimum space allowances for caged hens, most recently in the Welfare of Farmed Animals (England) (Amendment) Regulations (Anon 2002), which required an increase in minimum cage area from 450 to 550 cm<sup>2</sup> per hen from 1 January 2003. Clearly, this increase is not sufficient to prevent contravention of one of the UK Farm Animal Welfare Council's Five Freedoms — “freedom to display most normal patterns of behaviour” (FAWC 1992).

**Table 1 Advantages and disadvantages of conventional battery cages and of free-range housing for laying hens.**

| <b>Battery cages</b>  |  |
|---|--|
| <b>Advantages</b>   | <b>Disadvantages</b>   |
| Less labour for stockworkers.   | Prevention of normal expression of behaviours such as walking, foraging (pecking and scratching at floor litter), dustbathing, egg laying in a nest box, perching, wing stretching, wing flapping.   |
| No eggs laid on the floor.  | Barren environment.  |
| Total control of the environment (lighting, temperature, ventilation).                      | Variation between cage tiers (feather pecking and cannibalism most common in top tier).  |
| Small group size.   | Lack of exercise can reduce bone strength.   |
| Reduced risk of birds being denied access to food and water by other birds.                 | Cage structure may cause damage to feathers (abrasion) and feet (bumble foot).   |
| Birds separated from their droppings, and hence reduced risk and easier control of disease. | Risk of entrapment.  |
| Easier control of external parasites.   | Inability to escape aggression, feather pecking and cannibalism when this occurs.  |
| Absence of litter problems.   | Inspection of birds by stockworkers can be difficult, especially in top and bottom tiers.  |
| Reduced risk of damage attributable to aggression, feather pecking and cannibalism.         |  |
| Beak trimming not always necessary.   |  |
| Low mortality compared to other systems.  |  |
| Reduced risk of smothering.   |  |
| No risk of predation.   |  |
| <b>Free-range housing</b>   |  |
| <b>Advantages</b>   | <b>Disadvantages</b>   |
| Birds quiet and often easier to handle.   | Stocking density can be too high in places, increasing the risk of smothering.   |
| Freedom of movement and more exercise.  | Increased mortality.   |
| Enriched environment.   | Increased risk of feather pecking and cannibalism.   |
| Access outdoors and ability to range extensively and eat fresh grass.                       | Greater need for low light intensity and/or beak trimming to control pecking damage.   |
| Opportunity to dustbathe in soil.   | Risk of some birds being denied access to food and water because of aggression.  |
| Provision of perches and nest boxes at different heights, allowing greater use of space.    | Increased risk of disease attributable to contact with droppings and with wild birds.  |
| Most behavioural needs satisfied.   | Increased incidence of internal parasites attributable to contact with droppings and/or consumption of earthworms containing eggs or larvae.   |
| Perching and increased exercise can increase bone strength.                                 | Increased incidence of external parasites, especially red mite.  |
| Choice of nest boxes.   | Increased risk of collision and bone injury.   |
| More space for birds to avoid aggression and cannibalism.                                   | Eggs laid on the floor.<br>Increased risks of egg breakage and egg eating.<br>Reduced control of environment, especially near open doors leading outside.<br>Risk of crop impaction attributable to the consumption of uncut grass.<br>Exposure to predators and bad weather.<br>Less efficient conversion of food to eggs because of egg breakage, increased energy costs and the consumption of food by wild birds.<br>House layout and equipment makes it harder to inspect and depopulate birds. |

What Harrison (1964) did not highlight, and what current public opinion appears to be unaware of, is that the primary purpose of developing cage systems for laying hens in the 1950s was to reduce the incidence of disease by separating birds from their excreta. Indeed, land that had been used for too long for traditional (free-range) egg production, and which was heavily contaminated with hens' droppings, was commonly referred to as 'fowl sick' because of its associated high risks of avian tuberculosis and roundworm infestation (Wilson 1960; Norton 1964; DEFRA 2001). A recent survey revealed that 96% of a sample of modern free-range flocks in England and Wales was infested with parasitic worms (Pennycott & Steel 2001).

In fact, in a review of the main pros and cons of battery cages, Duncan (2001) identified no more disadvantages than advantages. Moreover, in the FAWC's Report on the Welfare of Laying Hens (FAWC 1997), the stated advantages of battery cages outnumbered the disadvantages, whereas the opposite was the case for perchery/barn and free-range (non-cage) housing. This is also evident in Table 1, which shows an expanded list of the main advantages and disadvantages of conventional battery cages and of free-range (including organic) housing.

In May 2002, a MORI poll commissioned by the Royal Society for the Prevention of Cruelty to Animals (RSPCA) revealed that 86% of 957 adults surveyed thought that battery cage systems were cruel, and that 78% believed that the UK government should ban cages immediately (RSPCA 2003a). If such apparently overwhelming condemnation of cages, and the favouring of free-range housing, is not consistent with the advantages and disadvantages of these systems known to commercial egg producers and to scientists, as indicated above, this raises the question of how this situation persists. More specifically, why does the public seem to be more concerned about contravention of just one of the FAWC's Five Freedoms (FAWC 1992) — to display most normal patterns of behaviour (see above) — in cages, than about the potential or likely contravention of the other four — freedom from hunger and thirst, from thermal and physical discomfort, from pain, injury, disease and infestation, and from fear and distress — in alternative (non-cage) systems? Implicit in the formulation of these Five Freedoms was the intended prevention of all forms of animal suffering, and there is no reason to suppose that contravention of any one of them would necessarily cause more suffering than contravention of the others.

In general, public opinion on the acceptability of laying hen housing appears to be either uninformed, partially informed, or misinformed. Consumer attitudes on such emotive issues are often instinctive, anthropomorphic, and entrenched. This is an issue where the prevailing public view is also reinforced by apparently biased media reporting and by campaigns of animal welfare organisations, such as the RSPCA's recent 'Uncaged Egg Survey' (RSPCA 2002) and 'Feathering Whose Nest?' report (RSPCA 2003b). On the other hand, it has to be admitted that there has been little attempt made either by the egg industry or by scientists to

moderate opinion in a proactive way. Perhaps this reflects a reluctance to air contentious issues in the public arena. The egg industry was, however, reactive in adopting the RSPCA's Freedom Food welfare labelling scheme.

### Public power

Council Directive 99/74/EC was preceded by the European Commission (EC) Scientific Veterinary Committee's Report on the Welfare of Laying Hens (EC 1996). In its conclusions, this report was equally damning both of battery cages and of alternative housing systems (such as aviaries, percheries, deep-litter, and free-range systems). Thus, it stated on the one hand, "It is clear that because of its small size and its barrenness, the battery cage as used at present has inherent severe disadvantages for the welfare of hens", and, on the other hand, "It is clear that mainly because of the risk of feather pecking and cannibalism, these [alternative] systems have severe disadvantages for the welfare of laying hens." For both types of housing, more deficiencies than benefits were identified. There is insufficient evidence, either in this EC report (EC 1996) or in Table 1 above, to conclude that battery cages are definitely worse than alternative systems in terms of their impact on laying hen welfare. Hence, the logical verdict in the case against the battery cage is one that is used in the Scottish legal system — 'not proven'.

Arguably, the decision taken in Brussels to ban conventional battery cages in the EU from 1 January 2012 (Council Directive 99/74/EC) could not have been based justifiably on the body of evidence presented in the EC Report on the Welfare of Laying Hens (EC 1996). It appears even more illogical in the context of one of the 'provisions' in the Directive — to increase minimum cage area per hen in battery cages from 450 to 550 cm<sup>2</sup> from 1 January 2003 (see below) — which will at least partly address the issue of insufficient space. One therefore has to conclude that the decision to ban battery cages was taken for mainly political reasons, reflecting a perception that the majority of public opinion was against battery cages. It should be noted that such a perception was not consistent with the fact that most table eggs sold in the EU were (and still are) laid by caged hens. This is because most consumers, despite professed opinions to the contrary, prefer to buy cheaper eggs. Thus, in the UK in 2002 (as stated above) 86% of people considered battery cages to be cruel and yet 68% of all eggs sold were laid by hens kept in these cages.

Unless its proposals are altered in the planned 2005 review, Directive 99/74/EC will allow the use of so-called 'enriched cages' after the battery cage ban takes effect on 1 January 2012. These provide hens with additional cage area, a nest, litter that allows pecking and scratching, and appropriate perches. A conclusion in the EC Report on the Welfare of Laying Hens (EC 1996) stated, "To retain the benefits of cages and overcome most of the behavioural deficiencies, modified enriched cages are showing good potential in relation to both welfare and production." This may well have contributed to the decision to ban battery cages.

For purely political reasons, however, the German parliament decided to 'gold plate' the Directive by banning battery cages in 2007 and enriched cages in 2012. Some other countries have considered following Germany's lead. Sweden, which had been due to phase out battery cages in 1999, now intends to do so at the end of 2003. In the Netherlands, a proposal to ban battery cages before 2012 has been withdrawn. In England, a full public 'Consultation on a possible ban on the use of enriched cages for laying hens in England', launched by the Department for Environment, Food and Rural Affairs (DEFRA) and sent to all interested parties, was completed in October 2002. The result of this, announced in March 2003 (DEFRA 2003), is that the UK government will defer a decision on banning enriched cages in England until conclusions have been received from the review of Directive 99/74/EC in 2005. The Animal Welfare Minister concluded "that as there is a lack of definitive evidence currently available, there are insufficient grounds at present to justify making a decision on a unilateral ban on enriched cages from 2012." DEFRA is currently funding research to improve scientific and practical knowledge of enriched cages.

Following a public appeal and a national referendum in 1981, one non-EU country, Switzerland, phased out the use of battery cages (but not enriched cages) at the end of 1991. Perhaps surprisingly, this did not lead to an increase in the importation of (cheaper) table eggs, although there has been an increase in imported egg products in convenience foods (E Froehlich 2003, personal communication).

### Structuring of welfare standards

Official standards for the welfare of livestock are intended to satisfy each species' behavioural needs and optimise its welfare. At present, however, there are ambiguities in the minimum standards, or 'provisions', specified in Directive 99/74/EC that can be exploited by commercial egg producers for the sake of profit, sometimes at the expense of bird welfare. These have been perpetuated both in the DEFRA's new code of recommendations for the welfare of laying hens (DEFRA 2002a) and in formal legislation (Statutory Instruments) passed in 2002 applying separately to England (Anon 2002), Scotland, Wales and Northern Ireland.

Concerning battery cages, Directive 99/74/EC required that, from 1 January 2003, suitable claw-shortening devices were to be fitted, and the minimum cage area per hen was to be increased from 450 to 550 cm<sup>2</sup>. Various types of claw-shortening device have been tested, and most seem to be effective (Elson 2002). There was some initial confusion about what was meant by the word 'suitable' (Cruikshank 2002), and it is still not clear what is an ideal claw length. There is a risk that some devices may shorten claws too much, and hence perhaps cause pain to the birds. Presumably, the increase in minimum cage area to 550 cm<sup>2</sup> was intended to reduce the number of birds per cage by one. However, this requirement was worded as "cage area, measured in a horizontal plane", rather than as "floor area". This allowed one cage manufacturer to develop an

'extended cage front', which many commercial egg producers have now fitted to permit continued stocking with the original number of birds per cage. Early anecdotal reports indicate that hens make full use of the additional space provided by the extended cage front, and that it even allows them to perch on the rear edge of the food trough (R Chapman 2003, personal communication).

For enriched cages, Directive 99/74/EC requires that there must be "litter such that pecking and scratching are possible." Prototype enriched cage designs included a litter area where hens could peck, scratch and dustbathe, typically on wood shavings. This was problematical because eggs were laid there, rather than in the nest area, and because litter was dispersed and had to be regularly replenished. However, because Directive 99/74/EC does not mention the word 'dustbathing', this allowed a different interpretation of 'litter'. In one manufacturer's latest prototype enriched cage, layers mash (litter) is delivered regularly onto a pan at the rear of the cage, from which the hens can scatter it onto a square of astroturf (litter area) situated underneath. In commercial trials with this prototype, hens were observed to spend much time pecking, scratching and eating mash particles on the astroturf, despite the fact that the same food was freely available in the trough at the front of the cage (A Joret 2002, personal communication). This appears to be a form of 'contra-free-loading', a behavioural phenomenon shown by various captive animals, including layer fowls, in choice feeding situations where they prefer to work for at least part of their daily food consumption (Duncan & Hughes 1972; Osborne 1977). As it represents fuller expression of foraging behaviour it may also reduce the risk of feather pecking and cannibalism (Aerni *et al* 2000). It may be as rewarding to hens as dustbathing, which they may choose to express in 'sham' form (Lindberg & Nicol 1997) on the wire cage floor, even when dustbathing substrate is provided (Briese *et al* 2004).

For alternative housing systems, Directive 99/74/EC requires that there must be "adequate perches, without sharp edges and providing at least 15 cm per hen", but it is not clear what is meant by "adequate perches" or what height they should be above the floor. Some egg producers provide aerial (elevated) perches, which hens use regularly and which may help to reduce pecking damage (Cordiner & Savory 2001). However, other producers do not like them, for various reasons, and argue that the slats in the floor of the 'raised slatted floor' type of system can be regarded as 'equivalent perch space', despite the fact that they may be covered with wire mesh. Some such floors are perforated sheets where the 'slats' are closer than the required minimum 30 cm spacing. In England, DEFRA accepts that 'perches' integrated within the floor can be regarded as perches (Widdowson 2003). In Scotland, however, the Scottish Executive Environment and Rural Affairs Department (SEERAD) takes the view that a perch must be something that a hen can grip with its claws, so perforated floors there now require something like tubing to be attached to them to provide the 'perches' (A Voas 2003,

personal communication). There are anecdotal reports that hens do not use these.

There is further ambiguity in Directive 99/74/EC relating to stocking density in alternative systems, and what is meant by 'usable' and 'available' areas. The ruling on beak trimming, that it may be authorised provided it is carried out "on chickens that are less than 10 days old and intended for laying", implies that it cannot be done subsequently to suppress outbreaks of cannibalism. Moreover, the Welfare of Farmed Animals (England) (Amendment) Regulations (Anon 2002) requires a total ban on beak trimming after 31 December 2010, and DEFRA (2002b) recently announced an action plan to enable this without compromising bird welfare (including the testing of an abrasive material in food troughs designed to wear down hens' beaks as they feed, based on the same principle as the claw-shortening device referred to above). This is at a time when the risk of feather pecking and cannibalism will be increased by the intended ban on battery cages. Commercial trials have shown that mortality attributable to cannibalism is consistently greater in alternative housing systems than in cages (eg Engstrom & Schaller 1993; Morgenstern & Lobsiger 1993).

One has to ask whether at least some of the ambiguities in Directive 99/74/EC have been put there deliberately. Surely, something as simple as having 'cage area' instead of 'floor area' cannot have been an accident? Cruickshank (2002) reported that the view of DEFRA's Animal Welfare Division on such uncertainties is: "We have not provided specific detailed advice on many aspects of the Welfare of Laying Hens Directive in the belief that we should move away from telling people what they should do and instead say what the welfare outcome should be. We also want to avoid preventing innovation."

## Conclusion

Clearly, the politicians who make the decisions, those responsible for formulating new animal welfare standards, and those responsible for enforcing them, all have to do a balancing act between satisfying public opinion on the one hand, while not compromising commercial interests too much on the other hand. New measures must also take account of practicalities. That raises the question of what level of priority is given to the actual impact these measures have on the animals themselves. In other words, to what extent should structuring of laying hen welfare standards represent a compromise between bird welfare, practicalities, public pressure and commercial interests?

## References

- Aerni V, El-Lethey H and Wechsler B** 2000 Effect of foraging material and food form on feather pecking in laying hens. *British Poultry Science* 41: 16-21
- Anon** 2002 The Welfare of Farmed Animals (England) (Amendment) Regulations (Statutory Instrument 2002, No. 1646). Her Majesty's Stationery Office: London, UK. Available at: <http://www.hmso.gov.uk/si/si2002/20021646.htm>
- Briese A, Sewerin K and Knierim U** 2004 Laying hen welfare in the modified cage system Aviplus. Poster abstract. In: Kirkwood

J K, Roberts E A and Vickery S (eds) *Proceedings of the UFAW International Symposium 'Science in the Service of Animal Welfare'*, Edinburgh, 2003. *Animal Welfare* 13: S239

- Cordiner L S and Savory C J** 2001 Use of perches and nest-boxes by laying hens in relation to social status, based on examination of consistency of ranking orders and frequency of interaction. *Applied Animal Behaviour Science* 71: 305-317
- Council Directive 99/74/EC** 1999 Laying down minimum standards for the protection of laying hens. *Official Journal of the European Communities* L203, p 55.
- Cruickshank G** 2002 Claw shortening confusion continues. *Poultry World Magazine* June 2002
- DEFRA** 2001 *The Welfare of Hens in Free Range Systems*. Department for Environment, Food and Rural Affairs Publications: London, UK
- DEFRA** 2002a *Code of Recommendations for the Welfare of Livestock: Laying Hens*. Department for Environment, Food and Rural Affairs Publications: London, UK
- DEFRA** 2002b Action plan agreed with stakeholders on beak-trimming of laying hens. Department for Environment, Food and Rural Affairs News Release, 8th October 2002. Available at: <http://www.defra.gov.uk/news/2002/021008a.htm>
- DEFRA** 2003 Enriched cages — the way ahead. Department for Environment, Food and Rural Affairs News Release, 18 March 2003. Available at: <http://www.defra.gov.uk/news/2003/030318a.htm>
- Duncan I J H** 2001 The pros and cons of cages. *World's Poultry Science Journal* 57: 381-390
- Duncan I J H and Hughes B O** 1972 Free and operant feeding in domestic fowls. *Animal Behaviour* 20: 775-777
- EC** 1996 *Report of the Scientific Veterinary Committee Animal Welfare Section on the Welfare of Laying Hens*. Commission of the European Communities: Brussels, Belgium
- Elson A** 2002 Claw shortener monitoring exercise: interim results. *Poultry World Magazine* November 2002
- Engstrom B and Schaller G** 1993 Experimental studies of the health of laying hens in relation to housing system. In: Savory C J and Hughes B O (eds) *Proceedings of the 4th European Symposium on Poultry Welfare* pp 87-96. Universities Federation for Animal Welfare: Wheathampstead, Herts, UK
- FAWC** 1992 The Five Freedoms. Farm Animal Welfare Council Press Notice 92/7, 7th October 1992
- FAWC** 1997 *Report on the Welfare of Laying Hens*. Farm Animal Welfare Council: London, UK. Available at: <http://www.fawc.org.uk/reports.htm>
- Harrison R** 1964 *Animal Machines: the New Factory Farming Industry*. Ballantine Books: New York, USA
- Lindberg A C and Nicol C J** 1997 Dustbathing in modified battery cages: is sham dustbathing an adequate substitute? *Applied Animal Behaviour Science* 55: 113-128
- Morgenstern R and Lobsiger C** 1993 Health of laying hens in alternative systems in practice. In: Savory C J and Hughes B O (eds) *Proceedings of the 4th European Symposium on Poultry Welfare* pp 81-86. Universities Federation for Animal Welfare: Wheathampstead, Herts, UK
- Norton C C** 1964 A survey of nematodes from the lower digestive tract of domestic fowls. *Journal of Helminthology* 38: 269-282
- Osborne S R** 1977 The free food (contrafreeloading) phenomenon: a review and analysis. *Animal Learning and Behavior* 5: 221-235
- Pennycott T W and Steel F** 2001 Parasitic worms in commercial free-range poultry flocks in England and Wales. *Veterinary Record* 149: 428
- Randall K** 2003 Business: layers drop. *Poultry World Magazine* January 2003

**RSPCA** 2002 *Uncaged Egg Survey*. Royal Society for the Prevention of Cruelty to Animals, Horsham, UK. Available at: <http://www.rspca.org.uk/campaigns>

**RSPCA** 2003a *Egg-Laying Hens — Facts and Report*. Royal Society for the Prevention of Cruelty to Animals, Horsham, UK. Available at: <http://www.rspca.org.uk/campaigns>

**RSPCA** 2003b *Feathering Whose Nest?* Royal Society for the

Prevention of Cruelty to Animals, Horsham, UK. Available at: <http://www.rspca.org.uk/campaigns>

**Widdowson J** 2003 DEFRA says yes to perching on the floor. *The Ranger (Magazine)* June 2003 (p 5)

**Wilson J E** 1960 Avian tuberculosis: an account of the disease in poultry, captive birds and wild birds. *British Veterinary Journal* 116: 380-393